

Claims

[c1] What is claimed is:

1.A front-end array process for making a liquid crystal display panel, comprising:

depositing a molybdenum-containing metal layer on a glass substrate;

forming a patterned photoresist and defining a gate and word line array pattern on said molybdenum-containing metal layer; and

using said patterned photoresist as an etching hard mask, uniformly etching said molybdenum-containing metal layer to form said gate and word line array pattern having slightly oblique sidewalls, wherein said etching of said molybdenum-containing metal layer uses gas mixture.

[c2] 2.The front-end array process for making a liquid crystal display panel according to claim 1 wherein after said etching of said molybdenum-containing metal layer, an over etching is carried out.

[c3] 3.The front-end array process for making a liquid crystal display panel according to claim 1 wherein oxygen/fluorine containing gas mixture is SF_6/O_2 having a ratio of

about 700sccm/300sccm.

- [c4] 4.The front-end array process for making a liquid crystal display panel according to claim 1 wherein said etching of said molybdenum-containing metal layer is executed under a process pressure higher than 25 mTorr.
- [c5] 5.The front-end array process for making a liquid crystal display panel according to claim 1 wherein said etching of said molybdenum-containing metal layer is further controlled by a source power, a bias power, process pressure, oxygen flowrate and flowrate of fluorine containing gas.
- [c6] 6.The front-end array process for making a liquid crystal display panel according to claim 1 wherein said molybdenum-containing metal layer is a dual-metal layer.
- [c7] 7.The front-end array process for making a liquid crystal display panel according to claim 6 wherein said dual-metal layer is Mo/AlNd, MoW/AlNd, or MoW/Al.
- [c8] 8.The front-end array process for making a liquid crystal display panel according to claim 1 wherein said etching of said molybdenum-containing metal layer is detected by an end-point detection method at an wavelength of about 704nm.

- [c9] 9.The front-end array process for making a liquid crystal display panel according to claim 1 wherein said gas mixture is oxygen/fluorine containing.
- [c10] 10.The front-end array process for making a liquid crystal display panel according to claim 1 wherein said gas mixture is oxygen/chlorine containing.
- [c11] 11.The front-end array process for making a liquid crystal display panel according to claim 1 wherein said gas mixture is oxygen/chlorine/fluorine containing.
- [c12] 12.The front-end array process for making a liquid crystal display panel according to claim 1 wherein said gas mixture is SiF_6/O_2 containing.
- [c13] 13.A front-end array process for making a liquid crystal display panel, comprising: depositing a molybdenum-containing metal layer on a glass substrate; forming a patterned photoresist and defining a gate and word line array pattern on said molybdenum-containing metal layer; and etching said molybdenum-containing metal layer by said patterned photoresist to form said gate and word line array pattern.
- [c14] 14.The front-end array process for making a liquid crystal display panel according to claim 13 wherein said gate

and word line array pattern have slightly oblique side-walls.

- [c15] 15.The front-end array process for making a liquid crystal display panel according to claim 13 wherein after said etching of said molybdenum-containing metal layer, an over etching is carried out.
- [c16] 16.The front-end array process for making a liquid crystal display panel according to claim 13 wherein oxygen/fluorine containing gas mixture is SF_6/O_2 having a ratio of about 700sccm/300sccm.
- [c17] 17.The front-end array process for making a liquid crystal display panel according to claim 13 wherein said etching of said molybdenum-containing metal layer is executed under a process pressure higher than 25 mTorr.
- [c18] 18.The front-end array process for making a liquid crystal display panel according to claim 13 wherein said etching of said molybdenum-containing metal layer is detected by an end-point detection method at a wavelength of about 704nm.
- [c19] 19.The front-end array process for making a liquid crystal display panel according to claim 13 wherein said molybdenum-containing metal layer is a dual-metal

layer.

[c20] 20. The front-end array process for making a liquid crystal display panel according to claim 19 wherein said dual-metal layer is Mo/AlNd, MoW/AlNd, or MoW/Al.